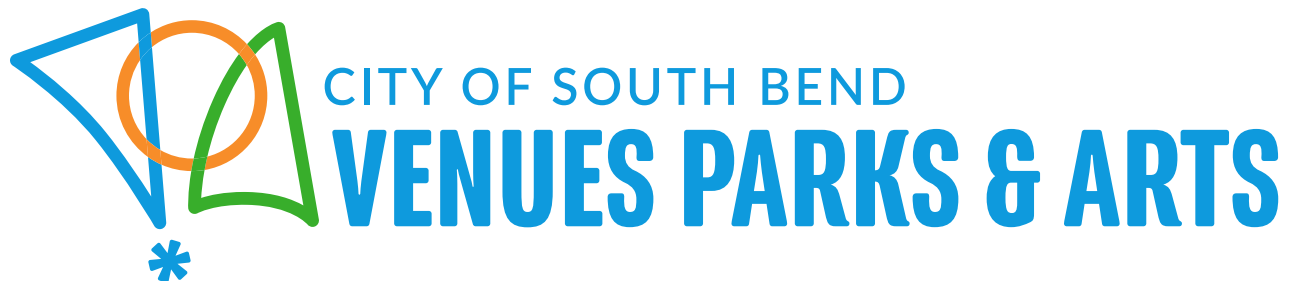

2021 Natural Resources Management Plan



I. SUMMARY

This 2021 revision of South Bend Venues Parks & Arts' Natural Resources Management Plan (NRMP) substantially expands on the two prior versions of the Plan. The original 2017 version and the 2020 update created broad outlines of the core principles that guide natural resources management in VPA properties and urban forestry. They also contained a list of "Identified Topics of Concern" and a list of "Sensitive Park Properties." Both of these lists came after hours of input from the Ecological Advocacy Committee (EAC).

Expanding upon these previous versions of this document was the primary focus of the 2020 EAC. To accomplish this goal, the EAC formed ad hoc subcommittees to address and analyze the "Identified Topics of Concern." Throughout 2020, the EAC worked alongside and with VPA and city staff, community, and regional experts to draft the 2021 NRMP. Upon completion, VPA staff presented his draft for reviewing, commenting, and vetting to numerous entities, including VPA Administration, Facilities & Grounds, Recreation & Programming, the Naturalist staff, and City Forestry.

This resulting document contains all of the elements of the previous plans plus the following revisions and additions:

1. "Identified Topics of Concern" is now expanded into two categories "Guiding Principles and Procedures" and "Management Strategies." The former is a list of core ecological principles that apply to all aspects of resource management, while the latter contains a list of actionable strategies, which is expanded into a matrix in Appendix E.
2. An introductory section that details the need for natural resources management in South Bend.
3. A revised page layout that includes 49 original and three historical photographs depicting natural resource assets, threats, and opportunities on VPA properties.
4. An appendix that details how each of 2017/2020's "Identified Topics of Concern" is addressed through guiding principles and management strategies.
5. Woodlawn Park added to the list of "Sensitive Properties."
6. An updated list of personnel
7. An all-new map of VPA properties that color-codes those identified in this Plan as ecologically significant.

What this 2021 plan aims to accomplish is to identify, promote, and work towards establishing guiding principles, policies, procedures, and management strategies to provide the necessary framework for Venue Parks and Arts, partners, and associates to build upon to create a more sustainable, informed, and ecologically sound city. Through the 2021 NRMP and its subsequent actions, South Bend will continue to position itself as a statewide leader in conservation and natural resources management.

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III. PERSONNEL

Board of Park Commissioners

President — Mark Neal

Vice President — Consuella Hopkins

Member — Aimee Buccellato

Member — Dan Farrell

City of South Bend

Director of Sustainability — Therese Dorau

Ecological Advocacy Committee

Chair — Steve Sass

Members — Jo Borrer, Lindsay Chadderton, John DiTillo, Amy Kryston, Alicia Peligrino, Allison Pudlo, Andrew Schnabel, Andrew Tucker

VPA Liaison — Garry Harrington

Of Counsel — Therese Dorau, Brent Thompson

Additional Resources and Expert Consultants

Chuck Beuter, Amanda Smith, Ecometrid

PARC Committee of South Bend Common Council

Chair — Sharon L. McBride

Vice Chair — Troy Warner

Members — Lori Hamann, Jake Teshka

Venues Parks and Arts Staff

Executive Director — Aaron Perri

Director of Facilities and Grounds — John Martinez

Supervisor of Rum Village Park — Garry Harrington

Naturalist — Hannah Teshka

Chief Development Officer — Annie Smith

Partnerships, Community and Standards Coordinator — Matthew Moyers

City Forester — Brent Thompson

About the EAC

Established in 2016 by Park Board Resolution 0004-2016, the Ecological Advocacy Committee (EAC) serves as an advisory committee to the South Bend Board of Park Commissioners and VPA staff. Volunteer committee members, serving in a series of one-year terms, provide as-needed input guidance, council, and advisory opinion on planning and development issues that affect parkland ecology and environmentally sensitive properties. EAC members offer extensive expertise in forestry, resource management, botany, site development planning, administration, and natural resources, and wildlife management. At the request of the Board of Park Commissioners, the EAC also oversees the formulation and updating of this Natural Resource Plan.

IV. INTRODUCTION



January sunrise at Elbel Park

A. The Importance of Natural Resources

By natural resources, we mean the water, air, minerals, soil, and all the organisms that comprise the many diverse ecosystems found on Earth. The quality and abundance of those natural resources influence where humans build their cities, develop their agricultural systems, and place their industries. Thriving human societies can exist only where the quality and abundance of natural resources are high.

In South Bend, the department of Venues, Parks, and Arts (VPA), which includes the Division of Forestry, under the direction of the South Bend Board of Park Commissioners, oversees many of the city's natural resources. The St. Joseph River, South Bend's central, defining asset, is bordered by over a dozen city park properties. Rum Village Park contains the city's largest urban forest, and Elbel Park is home to several plant and animal species designated as "endangered,

threatened, or rare" by the State of Indiana. Because they offer a variety of recreational activities, these and other park properties are vital to the health and well-being of South Bend residents and serve as destinations for visitors to the city.



Numerous South Bend Parks lay adjacent to the St. Joseph River, the city's most significant natural resource.

B. Managing VPA's Natural Resources

1. The Need for Management

South Bend is fortunate to be located in an area of abundant natural resources, with plentiful fresh water, fertile soils, and a climate moderated by Lake Michigan. The diverse terrestrial and aquatic ecosystems of our area developed over the past 14,000 years since the glaciers retreated from northern Indiana. The St. Joseph River Valley has been a source of natural resources for native peoples for at least 10,000 years. During that time of Native American settlement, ecosystems remained mostly intact and healthy.

With human settlement came the disruption of our ecosystem services. The clearing and draining of forests and prairies for farming, along with the straightening of rivers and

streams, resulted in increased flooding. Many Eurasian species of plants, animals, and pathogens introduced to Indiana, both intentionally and accidentally, have caused ecological, financial, and cultural damage. Humankind has drastically altered the landscape to our growing needs, and a consequence is the loss of plant and animal diversity. As a result, the natural resources contained within South Bend's parks now require a strategic, focused approach to management that works to regain a healthy, balanced ecosystem.

"We abuse land because we see it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect." — Aldo Leopold (Leopold 1949)



Early 20th Century image of the draining of the Kankakee River.
Photo Courtesy Northern Indiana Center for History.

2. South Bend's Parks: Past, Present & Future

Over the past century and a half, like other Midwestern municipalities, the needs and functions of South Bend's parks have shifted considerably. In 1879, when South Bend established our first park, St. Joseph County contained a diverse range of abundant natural habitats, including mature old-growth forests, tallgrass prairies, marshland around the headwaters of the Kankakee River, and of course, the south bend of the St. Joseph River, which meandered through the city.

As the city grew in size, a desire arose for tamed and managed outdoor spaces. Formally designed and maintained city parks provided some of the only

opportunities for outdoor public gatherings, concerts, celebrations, and other recreation. Additionally, through formal plantings and zoos, parks became places to showcase exotic plants and animals, while displacing those native to South Bend.

Throughout most of the 20th century and beyond, the rise in popularity of sports and recreational activities created a demand for additional infrastructure, which took precedence over natural resource management. During this period, as South Bend increased their parklands, the park



Early 20th Century postcards depicting invasive Mute Swans (*Cygnus olor*) in the duck pond at Leeper Park (left) and the Studebaker Fountain at Howard Park (upper right).

Photos courtesy St. Joseph County Public Library

department built four municipal golf courses, several baseball, softball, and soccer facilities, swimming pools, recreational centers, tennis courts, and other recreational infrastructure (Jones Petrie Rafinski 2014).

As times have changed, so have our surroundings. The wilderness that formerly surrounded South Bend is gone, having been replaced by farmland, industry, urban sprawl, roads, and other infrastructure, and South Bend parks now contain some of the last vestiges of natural and semi-natural lands. If we are to protect these natural parkland remnants and the species that depend on them for future generations, park planning and management must no longer be based solely on recreation and the current needs of humans. Instead, we must strive to balance those needs with sound ecological practices and policies.

3. Sustainability and Natural Resource Management

“Sustainability is an approach that accounts for environmental, economic and social impacts in activities both within city government and in the larger South Bend community. Sustainability focuses on maximizing the ‘Three Es’ — Economy, Environment, and Equity — also known as the ‘triple bottom line.’” (SBDS 2020). Through the creation of the Department of Sustainability and Council Resolution 4787-19, the City of South Bend has demonstrated a commitment to sustainability. With many of South Bend’s most environmentally significant properties under VPA control, the Natural Resource Management Plan serves to help guide and support the Department of Sustainability’s environmental objectives.



Recreational facility at Boem Park

C. Our Vision

“To manage resources under the jurisdiction of the South Bend Venues Parks & Arts Department to help enhance and maintain the ecological health of the environment and the social well-being of human populations.”

Four basic principles support this vision:

1. South Bend Venues Parks & Arts can manage natural resources to provide for both human use and a healthy environment.
2. Resource management must focus on principles that reduce the need for single-activity, human use management.
3. Stewardship, the involvement of people working with natural processes, is essential for successful implementation.
4. South Bend Venues Parks & Arts cannot achieve this vision alone but can, by its management processes and through cooperation and assistance from others, be a significant contributor to its achievement.

“The conservation of natural resources is the fundamental problem. Unless we solve that problem, it will avail us little to solve all others.” — Theodore Roosevelt (Roosevelt 1907)



Song Sparrow (*Melospiza melodia*) at Keller Park

V. GUIDING PRINCIPLES AND PROCEDURES



A. General Principles and Considerations

The basic guiding principles presented in this section apply to all elements of the Natural Resource Management Plan.

1. Supporting VPA's Mission, Vision, and Principles

The Natural Resource Management Plan shall support South Bend Venues Parks and Art's Mission, Vision, and Five Guiding Principles of social equity, ecology, safety, impact, and health & wellness.

2. Responsibility and the Public Interest

South Bend Venues Parks & Arts shall act responsibly in the public interest in managing its lands and natural resources. There shall be a conscious and active concern for the inherent value of natural resources in all VPA's plans, actions, and programs.

3. Diversity of Users

South Bend is a city of diverse neighborhoods with people of different cultures, nationalities, religions, traditions, and abilities. As such, all natural resource planning and implementation should consider this diversity.

4. Recreation and Other Factors Impacting Natural Resource Management

Ecological health is a critical consideration in resource management. It is, however, not the sole consideration, and natural resource management plans and strategies should seek to balance ecology with both passive and active recreation. Public safety and other factors that serve the common good must also be in focus.

5. Public Involvement and Accessibility

Natural resource management often includes making educated decisions that result in changes to long-standing practices and traditions. Whenever applicable, VPA will seek to involve residents and other community stakeholders in the review and process. VPA will also strive to make information accessible to the public and to educate the community on the reasons for making changes.

6. Legal Compliance

VPA actions that affect natural resources within the jurisdiction of the Board of Park of Commissioners shall comply with all policies of the City of South Bend, St. Joseph County, and the more stringent of applicable local, state, and federal laws.

7. Compensatory Damages

If a person or other entity damages natural resources under VPA control, they shall be held liable for the damage. VPA shall use funds recovered as a result of natural resources damage claims for restoration, replacement, or acquisition of equivalent natural resources.

8. Enforcement

Enforcement of laws primarily aimed at protecting natural resources and the recreational activities that depend on them is an integral part of natural resources management. The superintendent or manager of the affected area shall direct or coordinate these enforcement efforts.



Monarch butterfly (*Danaus plexippus*) caterpillars feeding on swamp milkweed (*Asclepias incarnata*) at Pinhook Park

B. Procedures and Methods

1. Tools for Management

To accomplish the stated goals of the Resource Management Plan, VPA should employ a variety of methods including, but not limited to:

- Working with the PARC Committee of the South Bend Common Council to revise South Bend Code of Ordinances
- Urging the Board of Park Commissioners to create resolutions where applicable
- Enforcing existing ordinances
- Creating educational campaigns
- Training VPA staff
- Continuing to utilize the Ecological Advocacy Committee (EAC) and other area and regional experts
- Establishing and adhering to best management practices (BMPs)

2. Science, Technology, and Industry Standards

Science and technology are ever-evolving. Scientific beliefs and practices that were standard decades ago are now antiquated, as are the methods of measuring and storing data. Natural resource managers should adhere to quantifiable, objective means of assessment, and frequently evaluate the scientific and technological standards used in resource management and utilize industry standards whenever possible.

3. Coordination with Other Entities

Matters affecting natural resources on park properties are often multi-jurisdictional and not limited to VPA control. As such, VPA should continue to strive to coordinate conservation efforts with other city, county, and state agencies and governments, land trusts, conservation organizations, educational institutions, and private landowners.

4. Inventory and Monitoring

The South Bend Venues Parks & Arts Department will assemble baseline inventory data describing significant natural resources under its stewardship and will monitor those resources to detect or predict changes. The resulting information will be analyzed to detect changes that may require intervention and to provide reference points for comparison with other, more altered environments.

5. Evaluations and Revisions

The successful implementation of management plans requires accurate data, evaluation, and revisions. Therefore, natural resource plans should include a protocol for periodic review and adjustments.

"To not learn from those failures, to learn and adapt, to grow, to evolve from them...that would be the true failure." — Aaron Perri (Perri 2018)

6. Publication of Research Data

Through both technical documents and popular media, VPA will make available to park staff, the scientific community, and the public the results of all scientific activities conducted in the parks. Department specialists should also publish their research findings and include them in public interpretive programs. The final studies and reports intended for public distribution will not include information on the locations of fragile natural resources or those subject to vandalism.

7. Informed Leadership

VPA decision-makers shall stay informed of the conditions of natural resources, the objectives of natural resources management plans, and potential or actual conflict between VPA actions and management plans and the policies and procedures herein.



Members of the South Bend-Elkhart Audubon Society monitoring winter bird populations at Elbel Park

C. Conduct of Research

The South Bend Venues Parks & Art Department will cooperate with other public and private institutions to establish cooperative park study efforts. In recognition of the scientific value of parks as natural laboratories, researchers are encouraged to use the parks for scientific studies when such use is consistent with department policies or site objectives and purposes.

Studies with the potential to disturb park resources or visitors, that require the waiver of any regulation, or that involve the collection of specimens, may be allowed only pursuant to the terms and conditions of an appropriate permit. Venues Parts and Arts will generally not permit manipulative or destructive research activities. However, VPA may grant exceptions if the value of the knowledge gained exceeds the impacted resource, or the research provides information essential for management.

D. Integrated Ecological Principles

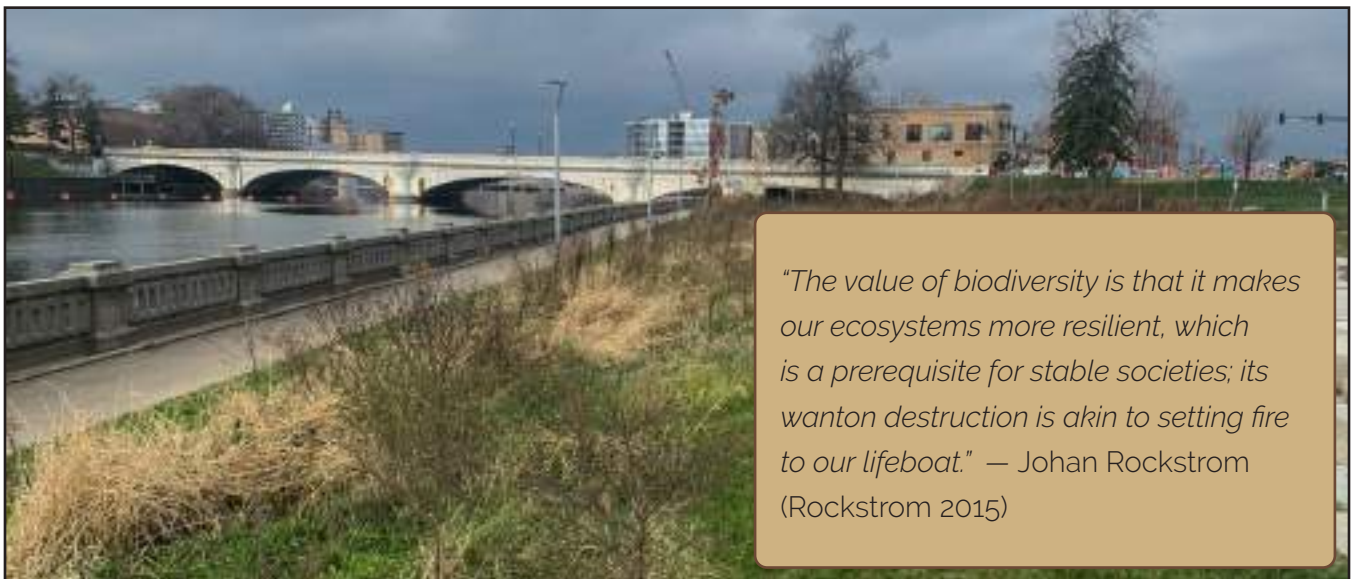
The core ecological principles contained within this section are multidisciplinary, and they serve to guide numerous areas of the Natural Resources Management Plan.

1. Climate Change

Climate change mitigation and adaptation are essential components of 21st Century resource management plans. Scientists predict that in the coming decades, climate change will strongly affect our natural resources (USGCRP 2018). Increased flooding will likely threaten South Bend's numerous waterfront parks. Hotter and drier summers could force the decline of species in the southern extent of their range, increase populations of species at the northern edge, and our native plants and animals will likely face increased pressure from invasive species. Although climate change is a complex global issue, South Bend VPA should take a proactive stance in planning and implementing local mitigation and adaptation strategies.

2. Biodiversity

Also known as biological diversity, biodiversity is the measure of the number and relative abundance of species within a given area. According to the United Nations Convention on Biological Diversity, "Biodiversity is essential for human health and well-being, economic prosperity, food safety, and security, and other critical areas necessary for the individual and collective thriving of all humans and all human societies (COBD1 2020)." Although climate change will likely negatively impact biodiversity, increasing biodiversity can be a tool for both climate change mitigation and adaptation (COBD2 2020). Highly biodiverse communities are more resilient to pests, disease, and ecosystem damage than degraded areas. For these reasons, whenever possible, through the management of public lands under its control, VPA should seek to maintain and increase biological diversity.



Native plant bioswales at Howard Park installed to mitigate the effects of flooding due to climate change

3. Invasive Species

The United States Department of Agriculture defines invasive species as “non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health” (Beck et al. 2006). Invasive species damage ecosystems by outcompeting and displacing native species. They cause a financial loss by lowering agricultural production, reducing the quality of recreational areas, and inflicting costs of eradication. Invasive species also significantly alter the complexion of our native landscapes, thus causing damage to South Bend’s natural heritage.

Although some invasive species, such as the emerald ash borer beetle and the fungus that causes Dutch elm disease, are the result of unintentional introduction, many are not. Irresponsible pet ownership has resulted in large populations of feral and free-roaming domestic cats that decimate birds and other wildlife. Several plants introduced for livestock forage and erosion control have escaped cultivation, but the majority of invasive plant species arrived via the nursery trade.

Historically, much of our landscapes have been guided primarily by aesthetics and without regard for ecological value or responsibility. As a result, an estimated 85% of our invasive terrestrial woody plant species are escapees from the nursery trade (Tallamy 2011). The Indiana Invasive Species Council maintains a list of species that are invasive in Indiana. VPA and the departments under their authority should strive to prevent further introduction of these invasive species and prioritize eradicating them in South Bend’s parks and public lands.

4. Native Plants

Native trees and other vegetation are those that existed in our region before European settlement. Native plants have adapted to the growing conditions in South Bend, and they are the basis for all terrestrial food webs. The reduction of native vegetation has resulted in a loss of plant and animal diversity. Whenever possible, VPA should favor native plants over non-native (exotic) plants.



Native oaks, such as these white oaks (*Quercus alba*) at Kennedy Park, are important sources of food for wildlife and are larval food hosts to hundreds of species of butterflies and moths.

5. Conservation Corridors

The term “conservation corridor” refers to the concept that fragmented islands of habitat can somehow be physically connected. In South Bend, riparian areas adjacent to the St. Joseph River, Bowman Creek, and Juday Creek provide opportunities for interconnecting wildlife habitat. Other possibilities for corridor pathways include multi-use trails, utility easements, and coordinating with other government entities and private landowners. VPA should strive to support and protect wildlife by utilizing these strategies and others, such as creating and maintaining microhabitats.

One of the primary challenges to contemporary conservation is addressing the increasing threat of the fragmentation of habitats suitable for sustaining wildlife. As humankind has increasingly developed lands to suit our needs, infrastructure, particularly streets and highways, has created dangerous obstacles surrounding the remaining pockets of natural habitat.

Although birds and mammals comprise the most visible number of casualties, reptiles, amphibians, and even terrestrial insects are perhaps the most impacted by habitat fragmentation. The inability of these flightless animals to safely travel outside of their respective habitats has resulted in isolated “islands” of localized populations as well as decreased genetic diversity, which places species at an increased risk for local extinction. The Woods Hole Research Center states, “nearly every animal and plant species requires traveling some distance for nutrition and reproduction, but few conservation or climate mitigation strategies take the connections between conserved lands into account” (WHRC 2020).



Eastern Box Turtle (*Terrapene carolina*), an Indiana Species of Special Concern, is particularly vulnerable to the lack of conservation corridors.

6. Microhabitats

Microhabitats are small pockets of land that support life. In many cases, microhabitats are the only means of supporting wildlife that would otherwise be absent within a given ecosystem.

a. Vernal Ponds

Also known as ephemeral ponds, vernal ponds are temporary wetlands that provide critical seasonal resources for wildlife, including breeding areas for amphibians and insects, as well as migratory stopover points for birds. Rum Village Park has several areas that contain vernal ponds.



Spring Peeper (*Pseudacris crucifer*) at Elbel Park

b. Dead and Downed Trees

Dead and downed trees are an integral component of forest ecosystems. Cavity-nesting birds use the standing trunks. Salamanders and other amphibians rely on downed trees for shelter, and many species of fungi and insects live in and feed on the decomposing wood. VPA and Forestry should strive to leave standing and fallen trunks in place wherever possible, particularly in ecologically sensitive areas such as the wooded areas within Rum Village and Elbel Parks.



Decomposing tree at Rum Village Park returning nutrients to the soil while providing wildlife habitat

c. No-Mow and Low-Mow Areas

A common strategy for creating additional wildlife microhabitats is the creation of no and low-mow zones. By reducing or eliminating mowing, VPA can convert otherwise unutilized spaces into ecologically productive habitats. These microhabitats provide many ecological benefits. They increase wildlife habitat, provide food and nectar sources for pollinators and other beneficial insects, they buffer and filter runoff, and they

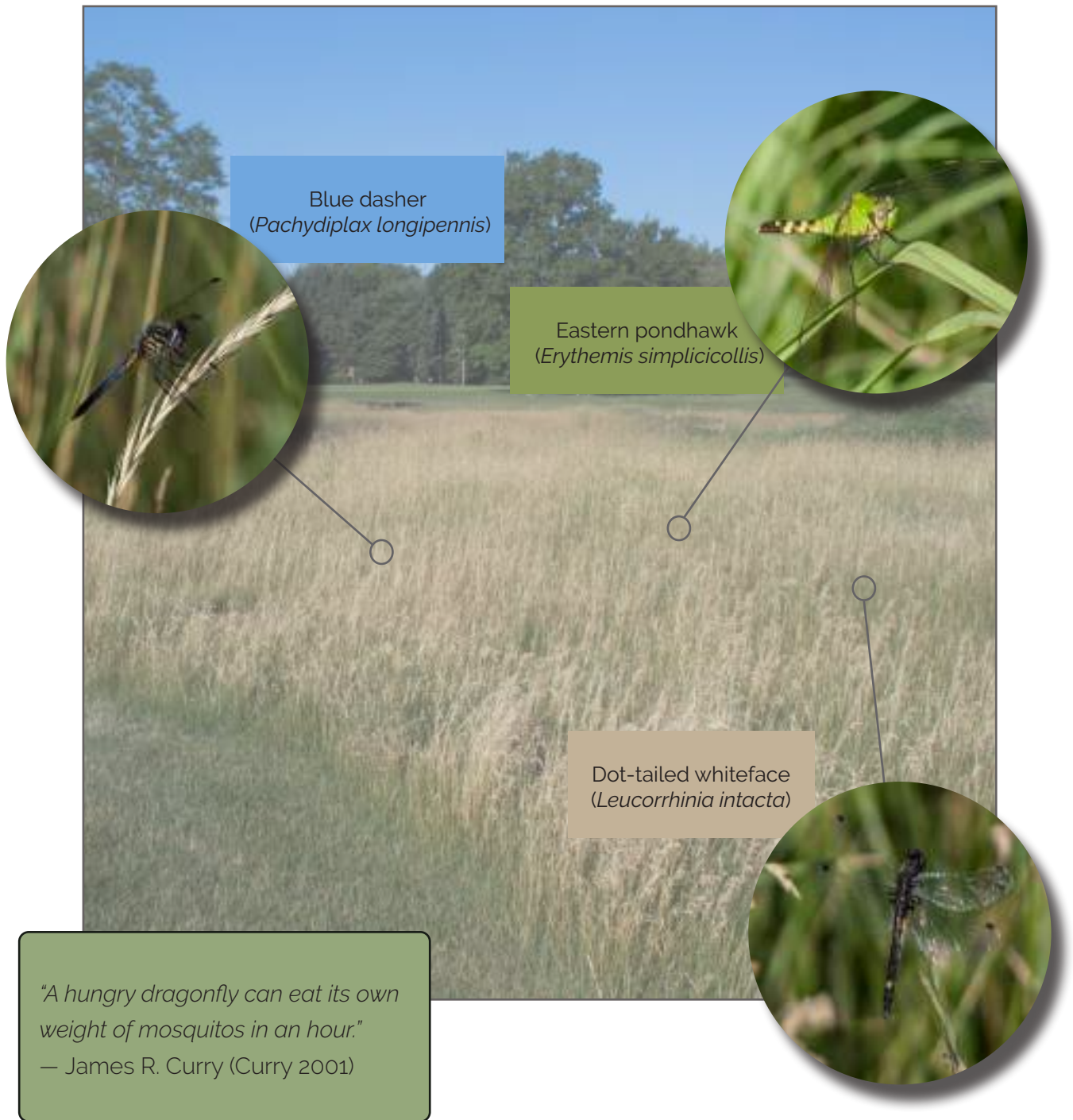
reduce carbon consumption. Typically, slopes, riparian areas, and otherwise unutilized, non-pedestrian land provide perfect opportunities for increasing wildlife habitat while reducing emissions and supporting the mission of the Department of Sustainability.

As their names indicate, no-mow areas are areas left to natural succession. Low-mow areas are mowed occasionally, often once per year, usually to maintain grassland by eliminating tree saplings. In the case of these areas, timing is imperative, and mowing should take place at a time that will minimize the impact on wildflower and insect populations.



Bioswale, no-mow area at Howard Park

Ecological Spotlight: A “low-mow” area of Elbel Park becomes essential habitat for beneficial insects.



7. Trails and Wildlife Viewing Areas

Trails and wildlife viewing areas are vital for educational and passive recreation activities such as nature study, photography, birdwatching, etc. When designing, updating, and managing park properties, care, and consideration should go into access to trails, viewing areas, and other infrastructure supporting passive recreation. Likewise, trail design and maintenance should always take into account sensitive habitats and other ecological considerations.

8. Outdoor Lighting

The International Dark-Sky Association (IDA) states that throughout history, life on Earth has relied on the natural cycles of light

and dark. They go on to say that “Scientific evidence suggests that artificial light at night has negative and deadly effects on many creatures, including amphibians, birds, mammals, insects, and plants” (IDA 2020).

Not only is the amount of light harmful to wildlife, but growing evidence suggests that the color temperature of the lights also plays a role, with the higher-temperature, bluer lights being the most detrimental (Longcore et al. 2018). Subsequently, South Bend Venues Parks and Arts should actively follow contemporary best practices for responsible outdoor lighting. These steps include reducing and eliminating excessive lights, ensuring that fixtures are directing light downward, and favoring the lower-temperature, warmer LED lamps.



The river overlook at Leeper Park will provide opportunities for both recreation and environmental education.

9. Routine Mowing

Mowing is a high-impact, labor-intensive maintenance activity. It adds to our carbon footprint and creates a non-native, ecologically barren, monoculture. Excessive, overly-intrusive mowing reduces wildlife habitat and creates secondary damage by encouraging foot traffic and non-designated parking. However, turfgrass holds up well to foot traffic, and it provides an ideal surface for sports and leisure activities. Natural resource management should balance the recreational needs that turfgrass provides while striving to reduce mowing in areas that are underutilized by recreation, and that would benefit from increased natural habitat.

10. Ecologically Degraded Properties

Historically, many of South Bend's park properties have been managed for recreation only. Others haven't had resource management plans, which has resulted in an inundation of invasive species and other ecological degradations. Whenever possible, natural resource management planning should strive to restore and enhance ecologically degraded properties.

"We have converted 62,500 sq miles (40 million acres) to suburban lawn in the U.S. This is over 8 times the size of New Jersey dedicated to an alien plant." — Douglas Tallamy (UMD 2009)



Routine mowing near Brownfield Park

11. Erosion and Bank Stabilization

Construction activities and invasive vegetation management on slopes and near waterways can potentially result in the degradation of riparian banks. Therefore, any such activities that threaten bank or slope stability or have a potential for soil runoff should also include a strategy for preserving the integrity of the slopes and banks.



VPA staff and EAC members survey erosion near Governor Joe Kernan Park

12. Community Engagement and Education

a. Volunteer Service

Achieving many of the goals of the research management plan requires significant community volunteer service. Therefore, VPA must continue to build and maintain a strong core of volunteers. Volunteers can help the parks in many ways, and by leveraging the talents of each individual, volunteer coordinators can direct them to where they are the most effective.

b. Regionally Focused Environmental Education

Environmental education that once consisted of unstructured time outdoors now primarily consists of zoos and television programming featuring megafauna, dangerous animals, and exotic ecosystems from around the world. As such, today's youth lack knowledge of their local animals, plants, and natural resources. Re-establishing and maintaining a connection between people and their local environment is a vital component to 21st-century environmental stewardship.

VPA should continue to create programs with an emphasis on local wildlife, plants, and natural resources and how they affect humans. Draw upon local success stories such as the return of nesting Bald Eagles and Peregrine Falcons, and the importance of the St. Joseph River.



Zephyr, South Bend's legendary patriarch Peregrine Falcon, who from 1999-2012, helped bring back the species from the brink of extinction, is on display at the Rum Village Nature Center.

c. Institutional Environmental Education

Although young people represent the future of environmental stewardship in South Bend, K-12 curriculum, ecological education is rare. Therefore, VPA shall continue to partner with the South Bend Community School Corporation, local colleges, homeschool groups, and other area schools to develop innovative environmental education programs designed to encourage and promote 21st-century ecological literacy.

"A critical aspect of the present-day crisis in education is that children are becoming separated from daily experience of the natural world."
~Robin C. Moore and Herb H. Wong
(Moore & Wong 2000)

d. Citizen Science

The National Geographic Society defines citizen science as "the practice of public participation and collaboration in scientific research to increase scientific knowledge." (NGS 2020). Through citizen science projects, participants contribute scientific data that is utilized by the greater scientific community, while broadening their understanding of the ecological sciences. Examples of citizen science projects include bioblitzes, breeding bird, frog, amphibian, and insect surveys, and water quality testing. By encouraging and supporting citizen science projects, VPA can compile and monitor the populations of animals and plants on park properties, which will aid in creating and adjusting resource management plans.



Numerous South Bend park properties such as Westhaven Park are adjacent to schools, thus providing opportunities for outreach and collaborative learning.

E. Natural Resource Management Areas

South Bend Venues Parks & Arts have three distinct categories of properties that they either manage or co-manage.

1. Sensitive Natural Zones — Directly Under VPA Control



Beck's Lake at LaSalle Park

These zones represent ecologically significant areas of parks and other South Bend-owned properties that VPA directly oversees and manages. They contain some of the last remaining natural habitats in South Bend. Examples of these zones include, but are not limited to, portions of those areas listed in Appendix B, “Ecologically Sensitive Park Properties.” VPA’s primary objective in managing these areas is the protection of natural resources for the current and future generations.

The following guiding principles pertain to these natural zones:

- Venues Parts and Arts will manage natural resources with a concern for fundamental ecological processes. Except for instances of Indiana State Listed Species, management will not be based solely on the preservation of individual species or features. Instead, management plans will strive to maintain all of the components and processes of naturally evolving ecosystems, including the abundance, diversity, and ecological integrity of the plants and animals.
- South Bend Venues Parks & Arts recognizes all parts of natural systems as

significant, and that change is an integral part of functional ecosystems. Therefore, VPA will not seek to preserve natural systems in natural zones as static at a given point in time.

- In sensitive natural zones, interference with natural processes will only be allowed:
 - When directed by the Board of Park Commissioners
 - In emergencies when human life and property are at risk
 - When restoring native ecosystem functionality altered by human activity, and with the council and guidance from the Ecological Advocacy Committee
- Ecosystem damage caused by past human

activity may require mitigation and restoration. When a historically accurate natural system is no longer attainable, VPA should utilize prevailing scientific theory and methodologies to attain the closest possible approximation.

- VPA and its community partners will monitor evolving plant and animal populations, and the human influences on them, to detect any significant unnatural changes.
- In the natural zone, VPA will take care to ensure that visitor uses and activities are appropriate for the property, and there may be situations in which the Executive Director may choose to close or limit public access to certain areas to protect the resources.

"Our parks and preserves are not mere picnicking places. They are rich storehouses of memories and reveries. They are guides and counsels to the weary and faltering in spirit. They are bearers of wonderful tales to him who will listen; a solace to the aged and an inspiration to the young." — Colonel Richard Lieber (Murphy 2006)



Goldenseal (*Hydrastis canadensis*) is one of over a dozen Indiana State Listed plants occurring on VPA properties.

2. Sensitive Natural Zones — Not Directly Under VPA Control



Cedar Lake forms part of the eastern boundary of Elbel Park.

The operations of South Bend Venues Parks & Arts extend to several spaces not directly under VPA control. Included in this category are lands along the St. Joseph River and its tributaries, and the wetlands adjacent to Elbel Park. Within these areas, VPA will act as a responsible partner and ensure that operations comply with all regulations and guidelines. VPA will work to form cooperative partnerships with other municipal, county, state, and federal agencies as well as with private landowners.

"Our city's genius is taking what we've already got, seeing a new value in it, and refashioning it for modern times."
— Mayor Pete Buttigieg (SBVPA 2020)



Students from the University of Notre Dame study the feasibility of converting the "35th Street Wetlands" drainage basin into a South Bend Park property.

3. Park Recreation Zones



The splash pad at Southeast Park

Park recreation zones are those that South Bend Venues Parks and Arts manages and maintains for intensive visitor use. No longer ecologically natural, these areas, sometimes referred to as “impacted acres,” often contain roads, walks, buildings, and other visitor and management facilities. VPA will strive to integrate “green infrastructure” into these properties as one means of mitigating the loss of their ecological value.

In recreation zones adjacent to natural zones, management will seek to create and maintain the most natural environment possible. This management may involve the manipulation of natural resources, but any such alterations should be the minimum necessary to achieve the planned use.

VPA will evaluate actions taken within managed and maintained active use spaces

for their environmental impact. If substantial natural resources are involved, the Executive Director will consult the Ecological Advocacy Committee for recommendations. If the effect from the proposed actions is negligible and natural resources remain essentially unchanged, the Executive Director’s management team will guide the process.

Example: A utility company requests an underground easement through Howard Park. The proposed route does not alter the impacted acreage of the park, and it has little to no impact on its flora or fauna. In this example, the VPA management team will work with the utility to minimize any possible adverse effects. Mitigation issues will be zero to modest and will be addressed by agreement prior to the Board authorizing the easement.

VI. MANAGEMENT STRATEGIES



Native wild raspberries and grapes at
O'Brien Park

A. Land and Aquatic Resources

1. Application of Chemicals

Strategy: Develop and implement best management practice (BMP) guidance for the application of fertilizer and herbicide in or adjacent to aquatic resources.

Key Considerations: Park management can include the use of fertilizers and herbicides. Eutrophication, an excess of nutrients frequently caused by runoff, and excessive use of herbicides can have lethal and sublethal effects on aquatic organisms. They also have the potential to degrade ecological communities and ecosystem function.

Process:

1. VPA and EAC develop BMP guidance.
2. Train F&G staff on implementation.
3. Implement BMPs at all sensitive natural properties and park recreation areas.
4. Monitor water quality and biological indicators to assess the benefit of BMP implementation.

Time Frame: Begin process in 2021.

Informing Documents: MP Strat 3.5.7, SP Obj 2.2 and 2.3, NRMP VA1, VB1, VB4. SJRWMP pgs 14-18.

2. Aquatic Resources Inventory and Assessment

Strategy: Map and characterize aquatic resources and water quality for all wetlands, ponds, streams, and rivers in and adjacent to VPA properties.

Key Considerations: Baseline measures of aquatic resource condition and water quality will help us to effectively track progress towards the ultimate goal of “healthy aquatic resources.”

Process:

1. VPA and consultants map all aquatic resources (wetlands, ponds, streams) wholly within and adjacent to VPA property boundaries.
2. Characterize baseline water quality (chemical and biological indicators, and habitat conditions) for these identified resources.

Time Frame: 2021 and then updated annually.

Informing Documents: MP Strat 3.5.7, NRMP VA1, VB4. RFTCF 02, SJRWMP.



Bowman Creek, a tributary to the St. Joseph River, passing through Ravina Park

3. Vegetation Buffers

Strategy: Create, Restore, and Maintain Natural Vegetation Buffers

Key Considerations: Natural vegetation buffers act to stabilize shorelines by preventing erosion. They also filter contaminants before they enter waterways, and they provide microhabitats and habitat corridors for the benefit of native plants and animals. Systems without adequate riparian vegetation are susceptible to degradation via increased sedimentation, non-point source pollution, increased solar exposure, and subsequent thermal stress. The creation, restoration, and maintenance of natural vegetation buffers will facilitate the goal of aquatic resource and water quality protection.

Process:

1. VPA and consultants map and characterize existing vegetation buffers for all aquatic resources (wetlands, ponds, streams) wholly within and adjacent to VPA property boundaries.
2. VPA and EAC create BMPs for natural vegetation buffers.
3. Train VPA F&G staff and other relevant entities on BMPs.
4. VPA staff work to restore and create new vegetation buffers, focusing first on “sensitive natural zones directly under VPA control.”
5. VPA implement education and outreach programs to enhance community understanding of the value of natural vegetation buffers.

Time Frame: Beginning 2021

Informing Documents: MP Strat 3.5.7 and pgs 45-46, SP Obj 2.2 and 2.3, NRMP VA1, VB1, VD6c, 9, and 11, RFTCF pg 49, SJRWMP.

“The establishment and preservation of buffers and natural floodplains (by policy, code, or ordinance) may be the single most important component of any plan to mitigate the impacts of storm water runoff. Once these features are lost, mitigation of stormwater runoff becomes more complicated and costly.” — St. Joseph River Watershed Management Plan (DeGraves 2005)

Ecological Spotlight: Increasing Native Vegetation Buffers at Pinhook Park Filters Pollutants and Creates Wildlife Habitat



4. River Windows

Strategy: Review the procedures for the creation and implementation of river windows. Create guidelines for best management practices.

Key Considerations: “River Windows” are human-made openings in the tree canopy designed to provide enhanced, scenic river views. They are also potential sources for slope destabilization, erosion, and the introduction and spread of invasive vegetation.

Process: VPA and EAC review the procedures for the creation and implementation of river windows. Create guidelines for best management practices and examine the need for policy changes.

Time Frame: 2021 and then reviewed annually

Informing Documents: MP Strat 3.5.7, SP Obj 2.2 and 2.3, NRMP VA1, VB1, VD7 and 11, RFTCF pg 9, SJRWMP.



River window along Riverside Drive near the Coal Line Trail

5. Slopes, Banks, and Shoreline Stabilization

Strategy: Develop and implement best management practice (BMP) guidance for shoreline management and stabilization.

Key Considerations: Impacts from construction projects, maintenance, invasive species removal, creation of river windows, etc. can introduce sedimentary and chemical pollution into waterways to the detriment of water and habitat quality, and biota. Excessive erosion, including undercut stream banks, sloughing shorelines, etc. can also threaten property and human health and well-being.

Process:

1. VPA and EAC develop BMP guidance.
2. Train F&G staff on the implementation of BMPs.
3. Implement BMPs at all sensitive natural properties and park recreation areas.
4. Monitor water quality and biological indicators to assess the benefits of BMP implementation.

Time Frame: 2021 and then updated annually

Informing Documents: MP Strat 3.5.7 and pgs 45-46, SP Obj 2.2 and 2.3, NRMP VA1, VB1, VB4, VD11. RFTCF pg 9, SJRWMP.



Bank erosion at Plaza Park

6. Ecologically Sensitive VPA Properties

Strategy: Maintain a list of VPA properties that are of high ecological value.

Key Considerations: Unless identified as such, properties with high ecological value are subject to damage from development and incorrect or insufficient management plans. Identification of these properties, along with their ecologically sensitive elements, will help to guide property-specific management plans.

Process: EAC and VPA to periodically review and update the list of ecologically sensitive park properties.

Time Frame: Ongoing

Informing Documents: NRMP VA1, VB4, and VE1.



Woodlawn Park, an ecologically sensitive property, contains both hillsides and shorelines.

7. Park Specific Resource Management Plans

Strategy: Create park-specific resource management plans.

Key Considerations: The lack of property-specific management plans threatens wildlife by requiring interpretation from VPA staff and contractors.

Process: VPA and EAC work to create comprehensive resource management plans for ecologically sensitive park properties.

Time Frame: VPA and EAC to begin creating plans in 2021.

Informing Documents: MP Obj 1.1, SP Obj 2.3, NRMP VA1.



Without site-specific management plans, resources such as the swale at Ponader Park are in danger of damage from overreaching mowing.

8. Parkland Protection

Strategy: Protect public parkland by adopting a policy that will strive to increase park property, while also protecting existing land by requiring environmental impact studies, remuneration, and other forms of mitigation as conditions of their disposal.

Key Considerations: Currently, little protection is in place for safeguarding against the disposal of VPA properties, including those that are ecologically sensitive.

Process: VPA and EAC to draft policy for consideration by the Park Board of Commissioners.

Time Frame: 2022

Informing Documents: NRMP VA1, and VA2.



The area of parkland next to the Potawatomi Greenhouse was formerly under consideration as a location for a fire station.

9. Outdoor Lighting

Strategy: Develop and implement best management practice (BMP) guidance for the implementation of outdoor lighting on park properties.

Key Considerations: Without standardized methods and procedures, the design, installation, and maintenance of exterior park lighting become potentially inconsistent with the guiding principles for responsible outdoor lighting.

Process:

1. VPA Facilities & Grounds create and maintain an inventory of all outdoor lighting fixtures on VPA property. This inventory should include the location, lamp type, color temperature, fixture type, and ownership.
2. EAC, VPA, and expert consultants create exterior lighting BMPS.
3. F&G strives to adhere to BMPs.
4. VPA/EAC present BMP guidance to the Park Board of Commissioners for consideration into policy.

Time Frame: Beginning in 2021

Informing Documents: SP Obj 2.3, NRMP VA1 and VD8.



A plethora of outdoor lighting fixtures at the Byers Softball Complex

10. Recycling

Strategy: Develop and implement a comprehensive recycling program for VPA properties.

Key Considerations: Without a department-wide recycling system, materials suitable for recycling are instead discarded to the landfill. As a community leader in environmental matters, VPA should set an example for citizens of South Bend by employing a means of recycling.

Process: VPA work with the Department of Sustainability and other entities to determine the feasibility and steps towards implementing a recycling system.

Time Frame: Beginning 2021

Informing Documents: MP Strat 3.5.6, SP Obj 2.3, NRMP IVB3, VA1, VB3.



Trash barrel containing recyclable materials at Coquillard Park.

B. Wildlife

1. Wildlife Monitoring

Strategy: Partner with schools, community organizations, national organizations, and other institutions to develop a protocol for monitoring wildlife on VPA and VPA associated properties.

Key Considerations: The lack of a coordinated system to monitor wildlife leaves us without a dataset to guide and evaluate wildlife protection policies.

Process: VPA naturalists and EAC to develop wildlife monitoring protocols and reach out to potential partnering community organizations.

Time Frame: Begin monitoring in 2021

Informing Documents: MP Strat 1.1.3 and 1.4.4. SP Obj 2.5, NRMP VA1, VB4, VB12 a and d, and VD2.



Red Headed Woodpeckers, once common at Rum Village, have become increasingly rare.

2. Wildlife Protection: Ordinances, Policies, Procedures, and Enforcement

Strategy: Evaluate existing ordinances, policies, procedures, and enforcement methods, involving potentially ecologically damaging park activities. Report the findings and make suggestions for improvements.

Key Considerations: Impacts from recreation and illegal activities threaten wildlife populations. Activities include, but are not limited to:

- Improper disposal of fishing equipment and helium balloons
- Encroachment from recreational activities that potentially impact nesting bird populations
- Use of drones
- Off-leash dogs
- Dumping/relocation of unwanted domestic animals and trapped wildlife

Process: VPA and EAC evaluate and issue a summarizing report. Work with South Bend Common Council, South Bend Animal Resource Center (SBARC), and other city agencies where applicable.

Time Frame: Beginning 2021

Informing Documents: MP Strat 1.1.3, SP Obj 2.2 and 2.3. NRMP VA1, VA7, and VB1.



Improperly discarded fishing gear at Pinhook Park

3. Nuisance Wildlife Management

Strategy: Create and maintain a comprehensive nuisance wildlife management plan.

Key Considerations: Nuisance wildlife is defined as native animals whose behavior or presence is posing public health risks, causing property damage, or are posing general nuisance issues. Failure to have a comprehensive management plan could lead to unanticipated public misconceptions, unintended harm to wildlife, and increased populations of nuisance wildlife.

Process: VPA, EAC coordinate with other municipalities to create a management plan.

Time Frame: Begin process in 2021

Informing Documents: MP page 61, SP Obj 2.3, and NRMP VA1.



Canada Geese (*Branta canadensis*) at Pinhook Park

4. Injured Wildlife Procedures

Strategy: Create and maintain a comprehensive, injured wildlife handling procedure.

Key Considerations: Without defined standards, injured wildlife may not be receiving timely treatment from rehabilitators.

Process: VPA and EAC create a plan and present to VPA management or Park Board for adoption into procedure or policy.

Time Frame: 2021 with annual review

Informing Documents: NRMP VA1.

C. Trees and Vegetation

1. Trees: Standards and Care Document

Strategy: Develop and maintain a document that specifies expected standards of care and maintenance of trees planted and cared for by city agencies and contractors.

Key Considerations: Many trees die unnecessarily due to improper planting, watering, soil compaction, and root damage. Incorrect pruning can result in disfigurement, disease, and rot.

Process: City Forester, VPA, EAC and potentially a professional consultant develop a “tree standards and care” document. Submit this document for reference or inclusion as an appendix in *Standards and Specifications*.

Time Frame: 2021-2022

Informing Documents: MP Strat 3.5.1, SP Obj 2.3, NRMP VA1, and VB3.

2. Master Tree Planting List

Strategy: Continue to maintain a “master tree planting list” to guide both landowners and contractors. Emphasize the use of native trees over exotic trees. Review and revise this list annually to reflect new cultivars and invasive species.

Key Considerations: The science that guides urban forestry is ever-evolving. Introduced pests, disease, invasive species, climate change, and the development of new cultivars all influence tree species selection and planting. Trees suitable for backyards and large-sized properties are often not appropriate for the tree and lawn areas. Without an up-to-date guiding document of trees recommended for planting, contractors and property owners often make misguided choices that result in safety hazards, unnecessary expenses, and liabilities.

Process: City Forester, VPA, EAC and potentially a professional consultant update the master tree planting list.

Time Frame: Beginning 2021 and then updated annually.

Informing Documents: MP Strat 3.5.1 and Strat 3.5.3, NRMP VA1, VD2, VD3, and VD4.



Native red oak (*Quercus rubra*) — (top) and sugar maple (*Acer saccharum*) — (right) at Erskine Park in October

3. Native Trees — Educational Materials

Strategy: Create educational materials (brochures, website content, etc.) advocating the use of native trees

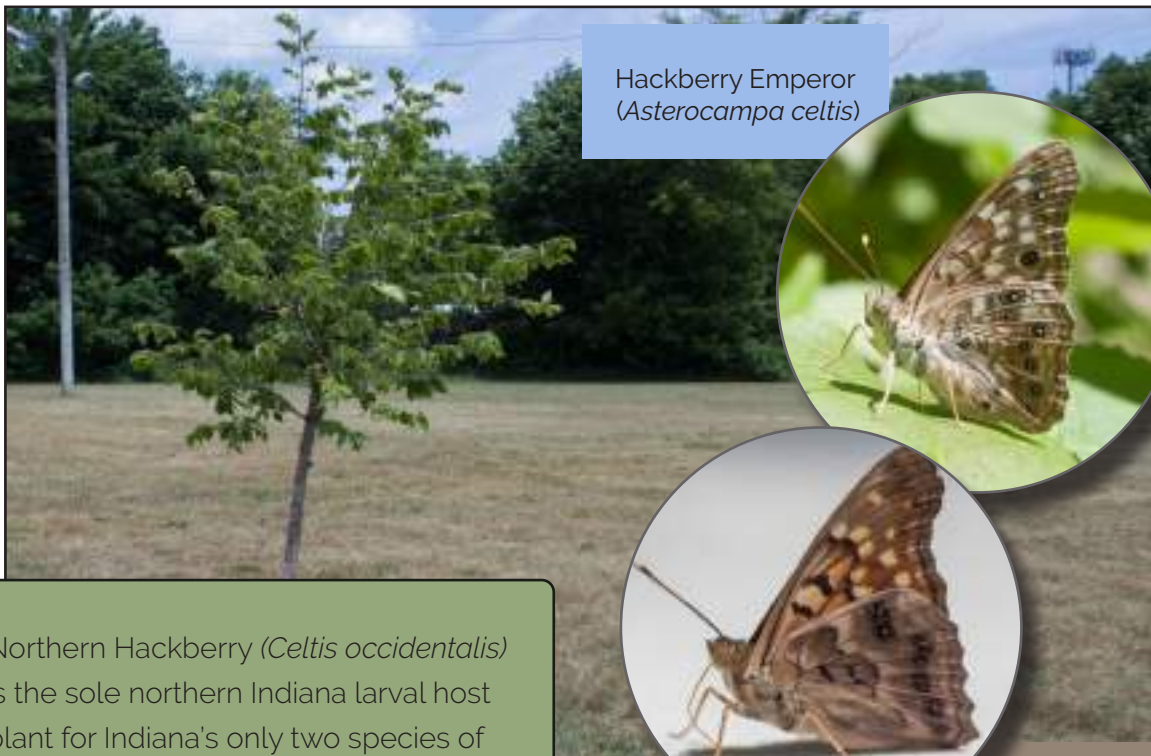
Key Considerations: Promote the use of native trees and to support changes to the list of prohibited vegetation by providing native alternatives.

Process: City Forester, VPA, and EAC work together to develop marketing materials.

Time Frame: 2020 for 2021 and then ongoing

Informing Documents: MP Strat 3.5.1 and Strat 3.5.3, VA1, VD2, VD3, and VD4.

Ecological Spotlight: Native Tree Plantings at Pulaski Park Support Butterflies



Hackberry Emperor
(*Asterocampa celtis*)

Northern Hackberry (*Celtis occidentalis*) is the sole northern Indiana larval host plant for Indiana's only two species of emperor butterflies.

Tawny Emperor
(*Asterocampa clyton*)

4. Hazardous Tree Evaluation

Strategy: Maintain and periodically review South Bend's hazardous tree evaluation form.

Key Considerations: A standardized hazardous tree assessment protocol is necessary for consistent practices and methods of tree evaluation and removal. Evaluating and recording the health of South Bend's trees also helps to protect the city from potential liability.

Process: City Forester, VPA, and EAC work to review the hazardous tree evaluation form.

Time Frame: 2021-2022

Informing Documents: SP Obj 2.3 and Obj 2.7, NRMP VA1.

5. Tree Trimming and Removal — Educational Materials

Strategy: Create and maintain educational materials on tree trimming and removal, including brochures and web pages.

Reasons: Trees on city property are trimmed and removed for various causes including, disease, rot, utility intrusions, sidewalk replacement, code violations, and control of invasive species. Because trees are typically long-lived and highly-valued, their trimming and removal often evoke strong emotions and pushback from the community.

Process: City Forester, VPA, and EAC work to create educational materials.

Time Frame: 2022

Informing Documents: MP Strat 3.5.1, NRMP VA1 and VB1.



VPA Forestry manages and maintains the oak-hickory savanna at Muessel Grove Park.

6. Arbor Day Tree Giveaways

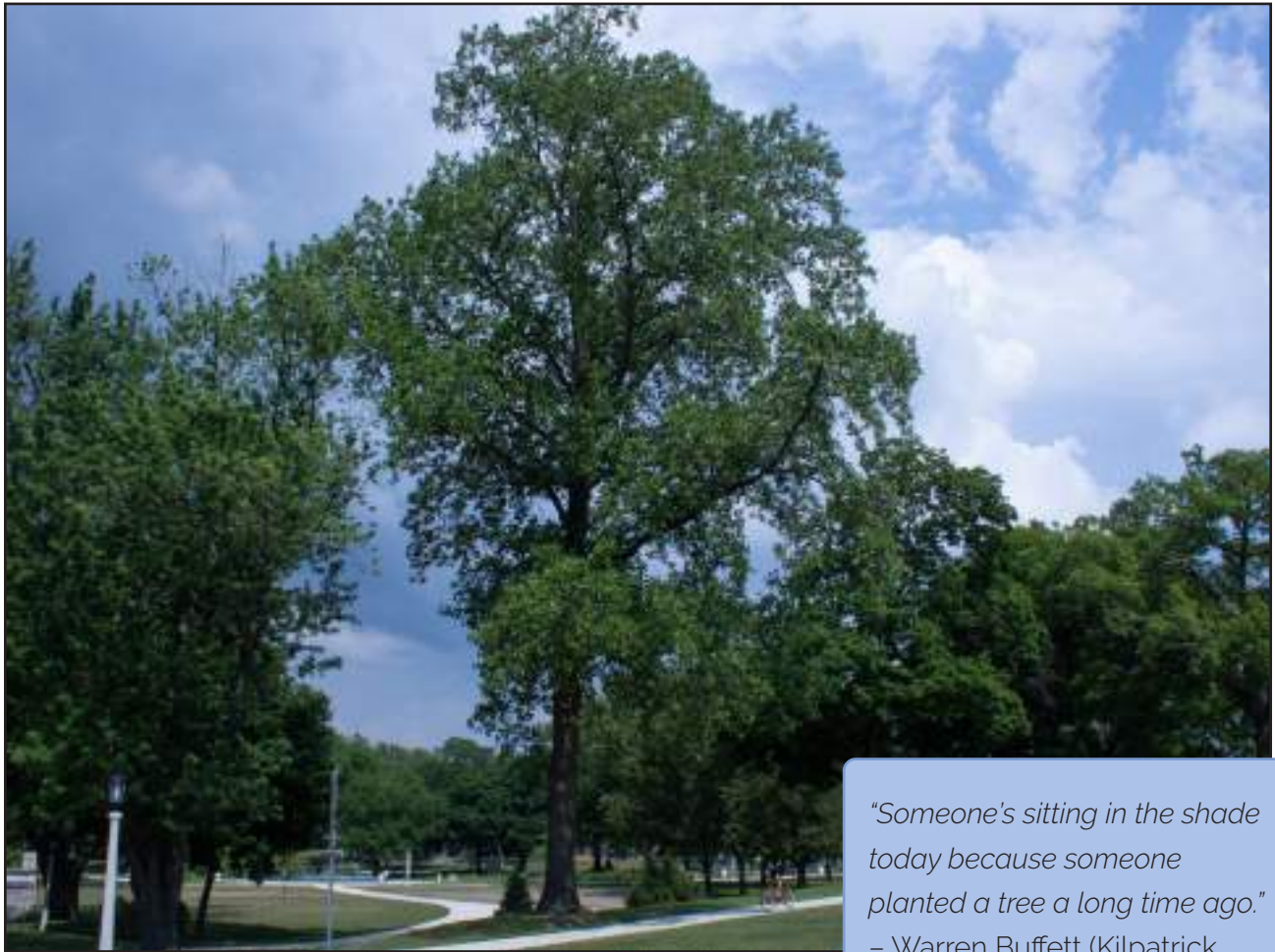
Strategy: Strive to distribute only trees native to northern Indiana at Arbor Day and other events.

Reason: Increase habitat diversity through community engagement. Giving away native trees is leading by example.

Process: City Forester and EAC work together to select native trees for the event.

Time Frame: 2021 and then ongoing

Informing Documents: MP Strat 3.5.1, NRMP VA1 and VD1.



Tuliptree (*Liriodendron tulipifera*) in Leeper Park was planted in 1932 by the Daughters of the American Revolution to commemorate George Washington's 200th birthday.

"Someone's sitting in the shade today because someone planted a tree a long time ago."
– Warren Buffett (Kilpatrick 2002)

7. South Bend City Code

Strategy: Prohibit the sale, distribution, and installation of invasive vegetation, as defined by the Indiana Invasive Species Council, in South Bend through the revision of Chapter 19 of South Bend City Code.

Reason: The Indiana Natural Resources Commission has recently enacted a rule prohibiting the sale of 44 species of invasive vegetation in Indiana. However, it excludes numerous “officially invasive” trees and plants popular with the nursery and landscape trades.

Process: EAC and VPA to work with the PARC Committee of South Bend Common Council to revise ordinances. EAC and VPA to launch a supporting educational campaign.

Time Frame: Continue work begun in 2018.

Informing Documents: NRMP VA1, VB1, and VD2.



A monoculture of the groundcover periwinkle (*Vinca minor*) covering the hillside at Veteran's Memorial Park. Although listed as officially invasive in Indiana, nurseries and garden centers continue to sell and promote it.

8. VPA Staff Invasive Species Training

Strategy: Establish a protocol to train VPA staff on the identification and removal of invasive vegetation.

Reason: Invasive trees and plants are a threat to ecology, and they exist on virtually every VPA property. Many outbreaks are manageable when caught early, and VPA maintenance crews are the first line of defense.

Process: EAC and VPA to develop and implement a training protocol for VPA staff.

Time frame: Begin framework in 2021.

Informing Documents: MP Obj 1.4.3, SP Obj 5.6, NRMP VA1, VB1, VD3.



Invasive plants poison hemlock (*Conium maculatum*), Canada thistle (*Cirsium arvense*), and reed canary grass (*Phalaris arundinacea*) along the path at Frederickson Prairie

9. "State Listed" Plants

Strategy: Create and maintain a list of Indiana "state-listed" plants located on VPA properties. Establish a monitoring protocol and standards to protect the populations of these plants.

Reason: State "listed," otherwise known as "Endangered, Threatened, Rare, and Watch List" species are those designated by the Indiana Department of Natural Resources as having varying degrees of imperilment in Indiana. Failure to monitor and protect these species could result in local extirpation.

Process: EAC and VPA to begin compiling a list of state-listed plants and a plan to implement a monitoring protocol.

Time Frame: Begin compiling in 2021.

Informing Documents: SP Obj 2.3, NRMP VA1, VB4, VD4, and VE1.



The carnivorous round-leaved sundew (*Drosera rotundifolia*) is an Indiana "Watch List" species that grows in the wetlands around Elbel Park.

10. Invasive Plant Management Plan

Strategy: Create an Invasive Vegetation Assessment and Management Plan.

Reason: For reasons outlined in VD2, invasive vegetation continues to cause significant damage to South Bend's ecosystems. One of the first steps towards mitigation and removal is accurately assessing the situation and developing a comprehensive management plan.

Process: City Forester, City Horticulturist, other VPA staff, EAC, and potential consultants to develop an invasive vegetation management plan. Explore grant opportunities to help with funding.

Time Frame: TBD

Informing Documents: SP Obj 2.3, NRMP VA1, VD1 and VD3.

11. Master Planting List

Strategy: Create a guide to recommended shrubs, vines, forbs, and grasses to serve as a companion guide to the Master Tree Planting List.

Reason: Without guidance from ecological experts, landowners and contractors rely heavily on the nursery trade for species selection, which often results in the installation of plants and trees of low to negative ecological value.

Process: Process: VPA staff, including City Horticulturist, EAC, and potentially consultants, develop a master guide to recommended landscape plants.

Time Frame: TBD

Informing Documents: MP Strat 3.5.1 and 3.5.3, NRMP VA1, VD1, VD2, VD3, and VD4.

D. Education and Community Engagement

1. Interpretive Signs

Strategy: Assess the needs and opportunities for interpretive signs at individual park properties. Strive to provide adequate funding for their creation and maintenance.

Key Considerations: Interpretive signs perform many functions. They explain ecological features, and they reinforce VPA's commitment to environmental stewardship. They protect natural resources by providing guidelines for expectations and proper use of park facilities, and they provide opportunities for self-learning. Missing or insufficient signage can result in lost educational opportunities and a diminished understanding of our natural resources.

Process: VPA staff and contractors should work with the Ecological Advocacy Committee and other experts to assess, design, and develop signs and other interpretive items.

Time Frame: 2021 and ongoing

Informing Documents: MP Strat 6.3.6, NRMP VA1, VB1, and VD12b.



Interpretive sign at Howard Park written and co-designed by EAC

2. Neighborhood-level Programming

Strategy: Increase neighborhood-level ecological programming and education by focusing on the natural features of South Bend's individual park properties. Increase interpretive signage, develop citizen science projects and self-guided learning. Utilize technological tools such as the Mobile Experience Lab.

Key Considerations: Ecologically informed citizens play a vital role in the health and well being of South Bend, but without access to quality environmental education, children and adults alike have a diminished ability to recognize, understand, and appreciate healthy ecosystems. With environmental programming taking place at only one or two centralized locations, many South Bend residents lack the opportunity to participate.

Process: VPA and EAC work together to assess neighborhood-level programming. Brainstorm ideas for increased outreach. Summarize ideas into a neighborhood outreach document.

Time Frame: Beginning like 2021 and ongoing with annual review

Informing Documents: MP Strat 3.4.1, SP Obj 3.6, NRMP VA1 and VD12d.



The Mobile Experience Lab "Boomer" at LaSalle Park

3. Park Stewardship Program

Strategy: Develop a site stewardship program, whereas volunteers from the community serve as site monitors for various park properties. These individuals would make routine inspections of their assigned parks and report problems and concerns, ecological and otherwise, to designated VPA contacts.

Key Considerations: To increase community investment and pride in their neighborhood parks, and to create a system in which key individuals from the community would have a more direct line of communication to VPA to report problems.

Process: VPA Volunteer Coordinator to work with various VPA departments and with EAC to develop the program.

Time Frame: Begin 2022

Informing Documents: MP Strat 1.4.4 and Strat 2.2.10, SP Obj 2.5 and Obj 2.6, NRMP VA1, VB3, and VB12a.



Unlawfully dumped grass clippings threaten native wetland plants at Frederickson Prairie.

4. Ecological Assessment of Parks

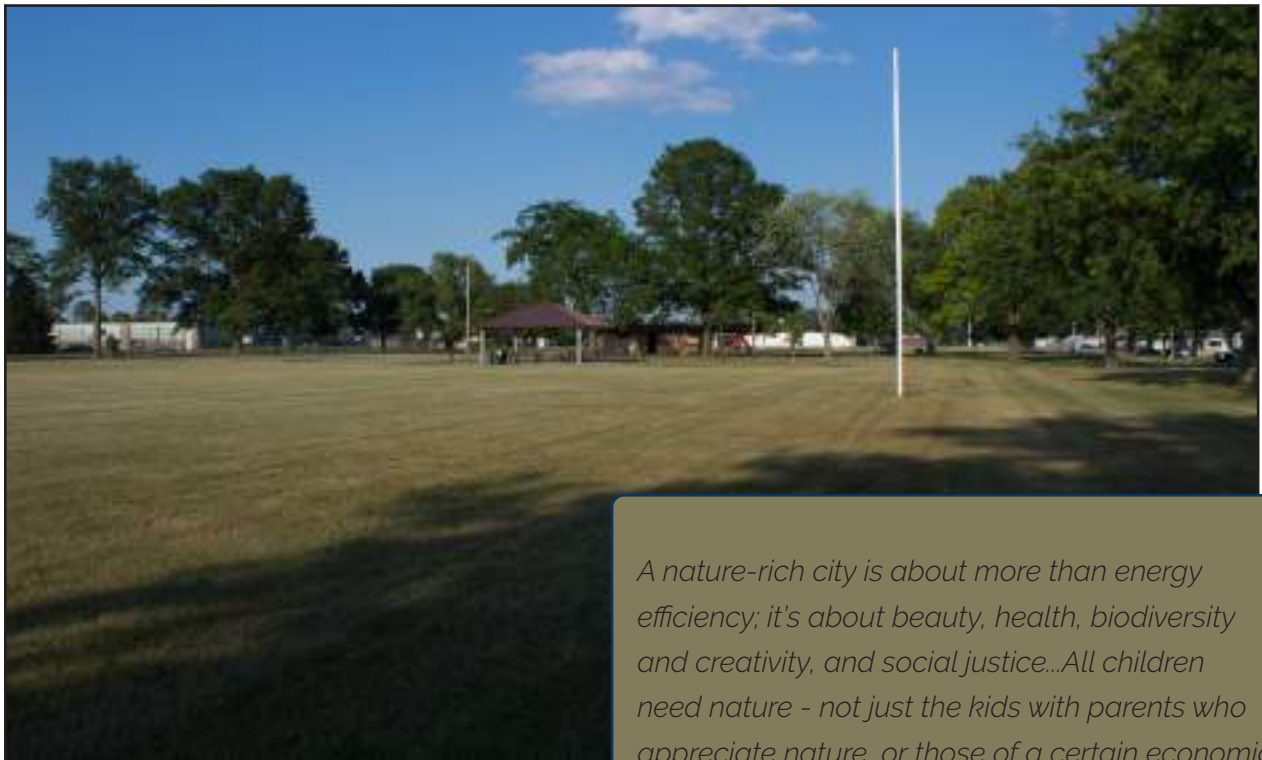
Strategy: Compile an ecological features assessment of all park properties and strive to add additional environmental learning tools such as pollinator and rain gardens, no-mow areas, etc.

Key Considerations: Many neighborhood parks are ecological deserts that do not contain elements useful for environmental education. Lack of access to natural features leads to a systemic devaluing of natural areas and functioning ecosystems.

Process: VPA naturalists, Facilities and Grounds, and EAC work to compile an ecological features list that includes exploring and developing opportunities to add additional elements.

Time Frame: Beginning 2021 with park-specific management plans, and then ongoing

Informing Documents: MP Obj 1.5, SP Obj 2.3, NRMP VA1, VB4, VD2, VD6, and VD10.



Aside from several mature trees, Voorde park is devoid of ecological elements.

A nature-rich city is about more than energy efficiency; it's about beauty, health, biodiversity and creativity, and social justice...All children need nature - not just the kids with parents who appreciate nature, or those of a certain economic class, sexual identity or set of abilities. Every child — Richard Louv (Louv 2016).

5. Special Event Programming

Strategy: Utilize existing events such as Best Week Ever and Back the Bend to promote environmental education. Create new interpretive programs to showcase recent and ongoing park improvements

Key Considerations: See 2. Neighborhood Level Programing.

Process: VPA staff, volunteers, and EAC create and implement new programs and expand outreach.

Time Frame: 2021 and then ongoing

Standards and Principles: NRMP VA1 and VD12.

6. Environmentally-themed Recreation

Strategy: Create environmental-themed recreation opportunities and incorporate environmental education into recreational activities. Examples include, but are not limited to, interpretive signage near fishing stations and boat launches, geocaching, nature scavenger hunts, self-guided park tours that utilize QR codes, and a local junior pin or patch program.

Key Considerations: The majority of park users come to the parks for recreational purposes only, and leave without receiving any environmental education, which results in a missed opportunity to educate about the natural features of South Bend parks.

Process: VPA to collaborate with EAC to create an actionable list of opportunities.

Time Frame: 2021 and then updated annually.

Standards and Principles: NRMP VA1, VA4, and VD12.

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APPENDIX A: IDENTIFIED CONCERNS

The topics presented below were created by the Ecological Advocacy Committee for the 2017 Natural Resource Management Plan (NRMP) and revised for the 2020 edition. Following each item is a reference to the 2021 NRMP principles and strategies that address the concern.

Aquatic Resource Management

1. Topics/Concerns:

- “Maintain/improve water quality”
 - “Water quality testing”
- “Protect/maintain wetlands, ponds, rivers and streams”

Resolutions:

- V. *Guiding Principals and Procedures*
 - D. *Integrated Ecological Principles*
 - 6. *Microhabitats*
 - c. *No-Mow and Low-Mow Areas*
 - 11. *Erosion and Bank Stabilization*
- VI. *Management Strategies*
 - A. *Land and Aquatic Resources*
 - 1. *Application of Chemicals*
 - 2. *Aquatic Resources Inventory and Assessment*
 - 3. *Vegetation Buffers*
 - 4. *River Windows*
 - 5. *Slopes, Banks, and Shoreline Stabilization*

2. Topic/Concern:

- “Create/restore/maintain natural vegetation buffers”

Resolutions:

- V. *Guiding Principals and Procedures*
 - D. *Integrated Ecological Principles*
 - 6. *Microhabitats*
 - c. *No-Mow and Low-Mow Areas*
 - 11. *Erosion and Bank Stabilization*
- VI. *Management Strategies*
 - A. *Land and Aquatic Resources*
 - 3. *Vegetation Buffers*

Aquatic Resource Management (Continued)

3. Topic/Concern:

- “Use best management practices when applying fertilizers/herbicides”

Resolution:

- VI. Management Strategies*
 - A. Land and Aquatic Resources*
 - 1. Application of Chemicals*

4. Topic/Concern:

- “Best practices techniques for properties adjacent to natural aquatic resources”

Resolutions:

- V. Guiding Principals and Procedures*
 - D. Integrated Ecological Principles*
 - 6. Microhabitats*
 - c. No-Mow and Low-Mow Areas*
 - 11. Erosion and Bank Stabilization*
- VI. Management Strategies*
 - A. Land and Aquatic Resources*
 - 1. Application of Chemicals*
 - 3. Vegetation Buffers*
 - 4. River Windows*
 - 5. Slopes, Banks, and Shoreline Stabilization*

5. Topic/Concern:

- “Bank management and stabilization, including attention to the practices determining the creation and maintenance of the River Windows project.”

Resolutions:

- V. Guiding Principals and Procedures*
 - D. Integrated Ecological Principles*
 - 11. Erosion and Bank Stabilization*
- VI. Management Strategies*
 - A. Land and Aquatic Resources*
 - 4. River Windows*
 - 5. Slopes, Banks, and Shoreline Stabilization*

Education

1. Topics/Concerns:

- “Increase public awareness and outreach “
 - “Develop interpretive signage”
 - “Neighborhood reach”

Resolutions:

- V. Guiding Principles and Procedures*
 - D. Integrated Ecological Principles*
 - 12. Community Engagement and Education*
 - a. Volunteer Service*
 - d. Citizen Science*
- VI. Management Strategies*
 - D. Education and Community Engagement*
 - 1. Interpretive Signs*
 - 2. Neighborhood-level Programming*
 - 3. Park Stewardship Program*

2. Topics/Concerns:

- “Develop nature programs and events to promote city values”
 - “Develop programs in conjunction with the SB Community SchoolCorp.”

Resolutions:

- V. Guiding Principles and Procedures*
 - D. Integrated Ecological Principles*
 - 12. Community Engagement and Education*
 - b. Regionally Focused Environmental Education*
 - c. Institutional Environmental Education*

3. Concern/Topic:

- “Include rec. opportunities as educational tools”

Resolutions:

- VI. Management Strategies*
 - D. Education and Community Engagement*
 - 6. Environmentally-themed Recreation*

Land Policies

1. Concern/Topic:

- “Identify properties based on ecological value”

Resolution:

- VI. Management Strategies*
 - D. Education and Community Engagement*
 - 4. Ecological Assessment of Parks*

2. Concern/Topic:

- “Balance recreational use with environmental responsibility”

Resolution:

- V. Guiding Principals and Procedures*
 - A. General Principles and Considerations*
 - 4. Recreation and Other Factors Impacting Natural Resource Management*

3. Concern/Topic:

- “Expand/improve trail infrastructure and nature viewing areas”

Resolution:

- V. Guiding Principals and Procedures*
 - D. Integrated Ecological Principles*
 - 7. Trails and Wildlife Viewing Areas*

4. Concerns/Topics:

- “Control erosion and restore degraded properties in select areas”

Resolutions:

- V. Guiding Principals and Procedures*
 - D. Integrated Ecological Principles*
 - 10. Ecologically Degraded Properties*
 - 11. Erosion and Bank Stabilization*
- VI. Management Strategies*
 - A. Land and Aquatic Resources*
 - 3. Vegetation Buffers*
 - 4. River Windows*
 - 5. Slopes, Banks, and Shoreline Stabilization*
 - D. Education and Community Engagement*
 - 4. Ecological Assessment of Parks*

Land Policies (Continued)

5. Concern/Topic:

- “Establish a policy to protect city parks while striving to acquire additional land”

Resolution:

VI. Management Strategies
A. Land and Aquatic Resources
8. Parkland Protection

6. Concern/Topic:

- “Citizen science involvement”

Resolution:

V. Guiding Principles and Procedures
D. Integrated Ecological Principles
12. Community Engagement and Education
d. Environmentally-themed Recreation

7. Concern/Topic:

- “Responsible practices for outdoor lighting that include concerns for the night sky and wildlife impacts”

Resolution:

V. Guiding Principles and Procedures
D. Integrated Ecological Principles
8. Outdoor Lighting
VI. Management Strategies
A. Land and Aquatic Resources
9. Outdoor Lighting

Management of Trees

1. Concerns/Topics:

- “Tree removal/trimming standards”
 - “Education efforts on why these standards are used”
 - “Include a hazard tree protocol”

Resolutions:

VI. Management Strategies

C. Trees and Vegetation

1. Trees: Standards and Care Document

4. Hazardous Tree Evaluation

5. Tree Trimming and Removal — Educational Materials

2. Concerns/Topics:

- “Comprehensive tree maintenance policy”
 - “Species to plant”
 - “Standards for care”

Resolutions:

VI. Management Strategies

C. Trees and Vegetation

1. Trees: Standards and Care Document

2. Master Tree Planting List

3. Concern/Topic:

- “Replant and restore native trees to maintain diversity”

Resolutions:

V. Guiding Principals and Procedures

D. Integrated Ecological Principles

2. Biodiversity

4. Native Plants

VI. Management Strategies

C. Trees and Vegetation

2. Master Tree Planting List

Management of Trees (Continued)

4. Concern/Topic:

- “Preserve microhabitats that support wildlife (downed trees, standing dead trees, etc.)”

Resolution:

- V. Guiding Principles and Procedures*
 - A. Land and Aquatic Resources*
 - 7. Park Specific Resource Management Plans*
 - D. Integrated Ecological Principles*
 - 6. Microhabitats*
 - b. Dead and Downed Trees*

5. Concern/Topic:

- “Manage and control invasive tree species”

Resolution:

- V. Guiding Principles and Procedures*
 - A. Land and Aquatic Resources*
 - 7. Park Specific Resource Management Plans*
 - D. Integrated Ecological Principles*
 - 3. Invasive Species*
- VI. Management Strategies*
 - C. Trees and Vegetation*
 - 7. South Bend City Code*
 - 8. VPA Staff Invasive Species Training*
 - 10. Invasive Plant Management Plan*

Vegetation Management

1. Concern/Topic:

- “Remove/control invasive species”

Resolution:

- V. *Guiding Principles and Procedures*
 - D. *Integrated Ecological Principles*
 - 3. *Invasive Species*
- VI. *Management Strategies*
 - A. *Land and Aquatic Resources*
 - 7. *Park Specific Resource Management Plans*
 - C. *Trees and Vegetation*
 - 7. *South Bend City Code*
 - 8. *VPA Staff Invasive Species Training*
 - 10. *Invasive Plant Management Plan*

2. Concern/Topic:

- “Maintain/promote/restore native plant species”

Resolutions:

- V. *Guiding Principles and Procedures*
 - D. *Integrated Ecological Principles*
 - 2. *Biodiversity*
 - 4. *Native Plants*
- VI. *Management Strategies*
 - A. *Land and Aquatic Resources*
 - 7. *Park Specific Resource Management Plans*
 - C. *Trees and Vegetation*
 - 2. *Master Tree Planting List*
 - 11. *Master Planting List*

3. Concern/Topic:

- “Monitor/protect listed species”

Resolutions:

- VI. *Management Strategies*
 - C. *Trees and Vegetation*
 - 9. *State “Listed” Plants*

Vegetation Management (Continued)

4. Concern/Topic:

- “Preserve habitat which supports wildlife”

Resolution:

- V. *Guiding Principles and Procedures*
 - D. *Integrated Ecological Principles*
 - 5. *Conservation Corridors*
 - 6. *Microhabitats*

5. Concern/Topic:

- “Best practices for mowing and chemical application”

Resolution:

- V. *Guiding Principles and Procedures*
 - D. *Integrated Ecological Principles*
 - 6. *Microhabitats*
 - c. *No-Mow and Low-Mow Areas*
 - 9. *Routine Mowing*
- VI. *Management Strategies*
 - A. *Land and Aquatic Resources*
 - 1. *Application of Chemicals*
 - 7. *Park Specific Resource Management Plans*

6. Concern/Topic:

- “List of native plants and tree species for preferred planting.”

Resolutions:

- VI. *Management Strategies*
 - C. *Trees and Vegetation*
 - 2. *Master Tree Planting List*
 - 11. *Master Planting List*

Wildlife Management

1. Concern/Topic:

- “Monitor/protect native wildlife”

Resolution:

- V. *Guiding Principles and Procedures*
 - D. *Integrated Ecological Principles*
 - 5. *Conservation Corridors*
 - 6. *Microhabitats*
 - 12. *Community Engagement and Education*
 - a. *Volunteer Service*
 - c. *Citizen Science*
- VI. *Management Strategies*
 - B. *Wildlife*
 - 1. *Wildlife Monitoring*
 - 2. *Wildlife Protection: Policies, Ordinances, and Enforcement*
 - 7. *Injured Wildlife Procedures*

2. Concern/Topic:

- “Nuisance wildlife management ”

Resolutions:

- VI. *Management Strategies*
 - B. *Wildlife*
 - 4. *Nuisance Wildlife Management*

3. Concern/Topic:

- “Maximize biodiversity with habitat enhancement”
 - “Support butterflies, moths and birds by planting native food sources”

Resolutions:

- V. *Guiding Principles and Procedures*
 - D. *Integrated Ecological Principles*
 - 2. *Biodiversity*
 - 4. *Native Plants*
 - 5. *Conservation Corridors*
 - 6. *Microhabitats*
 - 8. *Outdoor Lighting*
 - 10. *Ecologically Degraded Properties*

Wildlife Management (Continued)

VI. Management Strategies

A. Land and Aquatic Resources

1. Application of Chemicals
3. Vegetation Buffers
7. Park Specific Resource Management Plans
9. Outdoor Lighting

C. Trees and Vegetation

2. Master Tree Planting List
7. South Bend City Code
8. VPA Staff Invasive Species Training
10. Invasive Plant Management Plan
11. Master Planting List

APPENDIX B: SENSITIVE PROPERTIES

Venues Parks and Arts manages 56 properties. Fifteen of them are “pocket parks” of two acres or less. As previously stated, all the properties are significant, but some require additional management attention. Special care should be given to the St. Joseph River and its tributaries, wetlands, older-growth trees, and the following locations:

Elbel Park/Golf Course

Auten Road at Quince Road — 313.24 acres
Wetlands • Flora • Fauna • Topography •
Forest

Erskine Park/Golf Course

Miami Road at Ireland Road — 120 acres
Wetlands • Sizable trees • Topography

Frederickson Prairie

1300 South Bend Avenue — 14.24 acres
Clay cap remediation • Native prairie and pond

Howard Park

Jefferson Blvd. at St. Louis Blvd. — 11.49 acres
River • Riparian area

Keller Park

Riverside Blvd. near Sheridan Ave. — 16.91
acres
River • Riparian area

Kennedy Park

Olive St. at Westmoor St. — 38.56 acres
Trees — Numerous sizable oaks

Lasalle Park

Washington St. at Camden St. — 39.8 acres
Small lake

Leeper Park

Michigan Street at Park Lane — 25.72
River • Trees • Gardens

Muessel Grove Park

Wilber St. at Vassar Ave. — 17.26 acres
Remnant oak savanna • Trees — Large oaks

O’Brien Park

Michigan St. at Walter St. — 17.02 acres
Trees • Large American beech trees

Pinhook Park

2800 Block Riverside Drive — 42.69 acres
Oxbow lake • Trees • Flora/fauna • History

Ponader Park

Maple Lane at Douglas Road — 10.38 acres
Juday Creek

Potawatomi Park

Mishawaka Ave at Greenlawn Ave — 62.18 acres
Trees • History • Vernal ponds

Ravina Park

Indiana Ave. at Lebanon Street — .40 acres
Bowman Creek

Rum Village Park

Ewing Ave. at Gertrude Street — 160 acres
Trees • Flora/Fauna • Topography • History

Veteran’s Memorial Park

Twyckenham at Northside Blvd. — 16.11 acres
River • Trees

Wheelock Park

20400 Darden Road — 72 acres
Juday Creek introduction

Woodlawn Park

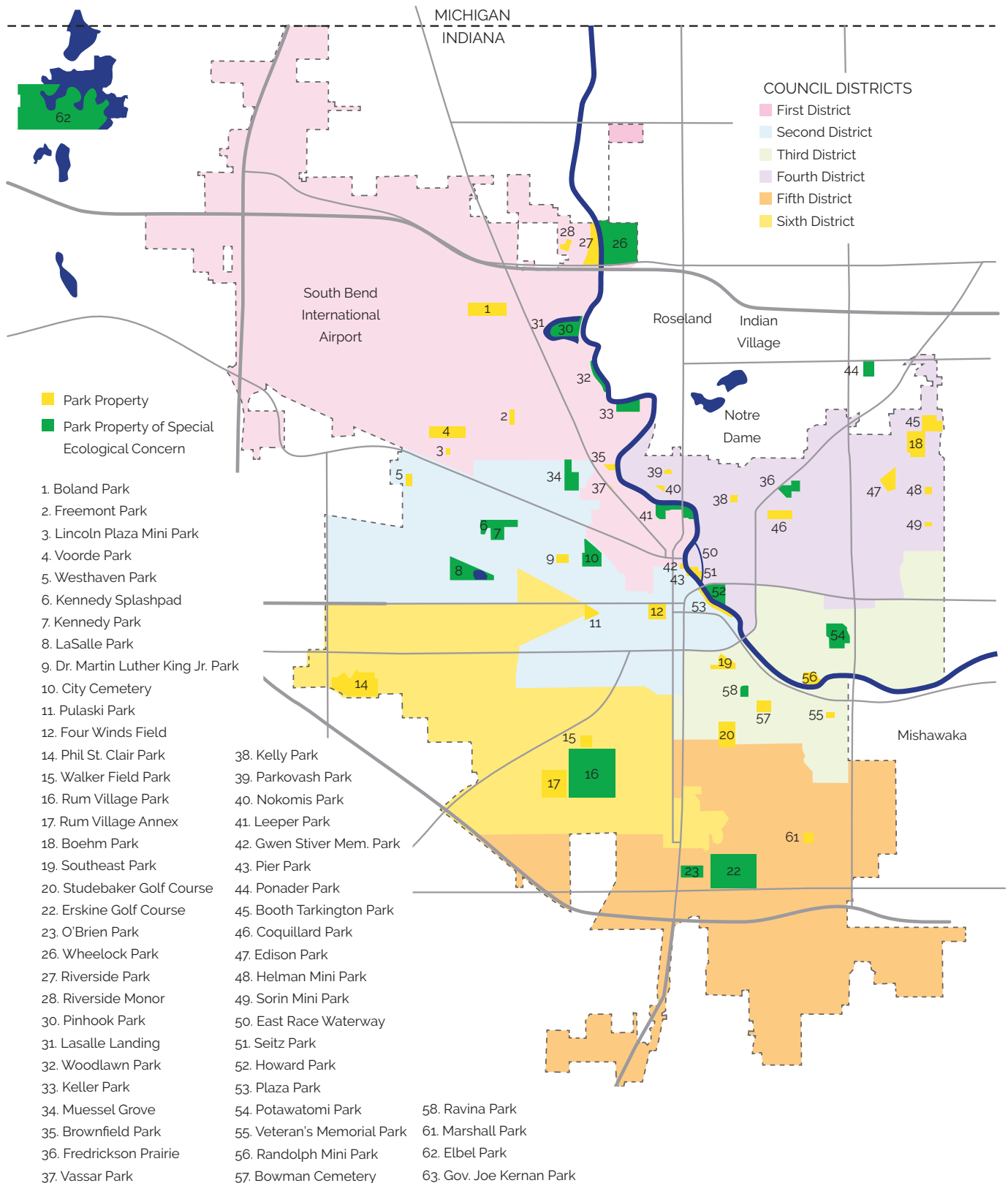
Riverside Blvd. at Woodlawn Blvd. — 16.56
acres
Woods • River • Riparian area

APPENDIX C: ACRONYMS

Acronyms used in this document:

- **ADM** — The executive and administrative staff of South Bend Venues Parks & Arts
- **BMP** — Best management practices
- **DOF** — Venues Parks & Arts Forestry Division
- **EAC** — Ecological Advocacy Committee
- **EXP** — The “Experience Division” of Venues Parks & Arts
- **F&G** — The Facilities and Grounds department of Venues Parks & Arts
- **FOSJR** — Friends of the St. Joe River
- **GO** — VPA Golf Operations
- **HRW** — Hooser Riverwatch, a program of the Indiana Department of Environmental Management (IDEM)
- **MP** — The Master Plan of South Bend Parks and Recreation for the years 2014-2018. (see “Jones Petrie Rafinski 2014” in *References*)
- **NAT** — The VPA naturalist staff
- **NRMP** — The Natural Resources Management Plan (this document)
- **RFTCF** — The South Bend Riverfront Park and Trail Conceptual Framework (see “Smithgroup JJR” in *References*)
- **SJRWMP** — The St. Joseph River Watershed Management Plan (see “DeGraves A” in *References*)
- **SP** — Strategic Plan of Venues Parks & Arts for the years 2017-2021 (see “SBVPASP” in *References*)
- **SUST** — The South Bend Department of Sustainability
- **SWCD** — The St. Joseph County Soil and Water Conservation District
- **VCO** — The Venues Parks & Arts’ Volunteer Coordinator
- **VPA** — Venues Parks & Arts

APPENDIX D: PARK PROPERTIES



APPENDIX E: STRATEGY MATRIX

2021 NRMP STRATEGIC IMPLEMENTATION MATRIX					
			Timeframe (years)		
Strategy/Action Steps	Lead Role	Potential Partners	Short	Med.	Long
A: Land and Aquatic Resources					
A1: Application of Chemicals					
A1a: Develop BMP guidance	EAC	F&G, GO, NAT	1-3		
A1b: Train F&G staff on implementation	F&G	EAC, GO, NAT	1-3		
A1c: Implement BMPs	F&G, GO	EAC, NAT	1-3		
A1d: Monitor and assess water quality	EAC, NAT	F&G, FOSJR, HRW, SWCD		4-5	5+
A2: Aquatic Resources Inventory and Assessment					
A2a: Map aquatic resources	EAC	NAT	1-3		
A2b: Characterize baseline water quality	EAC	NAT	1-3		
A3: Vegetation Buffers					
A3a: Map/characterize existing buffers	EAC	NAT	1-3		
A3b: Create BMPs for existing buffers	EAC	NAT	1-3		
A3c: Train F&G and others on BMPs	F&G	EAC, GO, NAT	1-3		
A3d: Restore/create vegetation buffers	F&G, GO	EAC, NAT		4-5	
A3e: Implement outreach/education	EAC, NAT	F&G, GO		4-5	5+
A4: River Windows					
A4a: Research and review standards and existing policies	EAC	F&G, NAT	1-3		
A4b: Submit recommendations	EAC	F&G, NAT	1-3		
A5: Slopes, Banks, and Shoreline Stabilization					
A5a: Develop BMP guidance	EAC, NAT	F&G	1-3		
A5b: Train F&G on BMP implementation	F&G	EAC, NAT	1-3		
A5c: Implement BMPs	F&G	EAC, NAT	1-3		
A5d: Monitor water quality and biological indicators	EAC, NAT	F&G, Outside Partners	1-3	4-5	5+

VPA 2021 Natural Resources Management Plan

2021 NRMP STRATEGIC IMPLEMENTATION MATRIX (CONTINUED)					
			Timeframe (years)		
Strategy/Action Steps	Lead Role	Potential Partners	Short	Med.	Long
A6: Ecologically Sensitive VPA Properties					
A6a: Review and update property list	EAC	NAT	1-3	4-5	5+
A7: Park Specific Management Plans					
A7a: Create comprehensive site-specific management plans	EAC, NAT	consultants	1-3		
A8: Parkland Protection					
A8a: Draft policy on parkland protection	ADM	EAC, F&G, NAT	1-3		
A9: Outdoor Lighting					
A9a: Inventory exterior lights on VPA property	F&G	outside partners	1-3		
A9b: Create exterior lighting BMPs	EAC, NAT	F&G, regional experts	1-3		
A9c: Implement BMPs	F&G	regional experts		4-5	
A9d: Create outdoor lighting policy	ADM	EAC, F&G, NAT, regional experts		4-5	
A10: Recycling					
A10a: Develop comprehensive recycling program for VPA properties	ADM	EAC, F&G, SUST		4-5	
B: Wildlife					
B1: Monitor Wildlife					
B1a: Develop wildlife monitoring protocol	EAC, NAT	outside partners	1-3		
B2: Wildlife Protection: Ordinances, Policies, Procedures, and Enforcement					
B2a: Issue summarizing report	EAC, NAT	F&G	1-3		
B3: Nuisance Wildlife Management					
B3a: Create Nuisance Wildlife Management plan	ADM, NAT	EAC, county and municipal neighbors	1-3		
B4: Injured Wildlife Procedures					
B4a: Create comprehensive injured wildlife procedure	EAC, NAT	F&G	1-3		

2021 NRMP STRATEGIC IMPLEMENTATION MATRIX (CONTINUED)					
			Timeframe (years)		
Strategy/Action Steps	Lead Role	Potential Partners	Short	Med.	Long
C: Trees and Vegetation					
C1: Standards and Care Document					
C1a: Create "Standards and Care" Document	DOF, EAC	NAT, consultants	1-3		
C2: Master Tree Planting List					
C2a: Update "Master Tree Planting List"	EAC, NAT	NAT, consultants	1-3		
C3: Native Trees — Educational Materials					
C3a: Develop marketing materials to promote the use of native trees	DOF, EAC	EXP, NAT, consultants	1-3		
C4: Hazardous Tree Evaluation					
C4a: Review and update hazardous tree evaluation form	DOF, EAC	NAT	1-3		
C5: Tree Trimming and Removal — Educational Materials					
C5a: Develop educational materials	DOF, EAC	EXP, NAT, consultants	1-3		
C6: Arbor Day Tree Giveaways					
C6a: Select and distribute only native trees for Arbor Day and other events.	DOF	EAC	1-3	4-5	5+
C7: South Bend City Code					
C7a: Review and suggest revisions to Chapter 19 of municipal code	DOF, EAC	ADM, F&G, NAT	1-3		
C8: VPA Staff Invasive Species Training					
C8a: Develop and implement invasive species training protocol	EAC, F&G	NAT, consultants	1-3		
C9: State Listed Plants					
C9a: Compile a list of "state-listed" plants on VPA properties.	EAC	NAT	1-3		
C9b: Develop protocol for monitoring "state-listed" plants	EAC	NAT, consultants	1-3		
C10: Invasive Plant Management Plan					
C10a: Develop Invasive Plant Management Plan	DOF, EAC	NAT, consultants		4-5	

VPA 2021 Natural Resources Management Plan

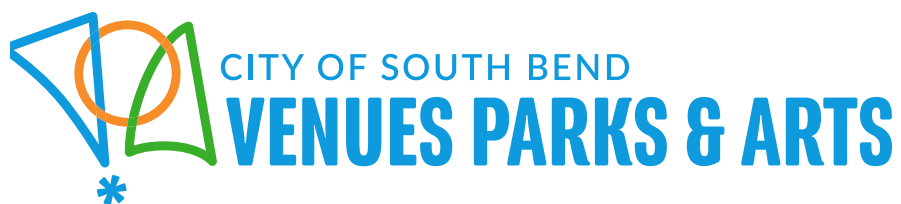
2021 NRMP STRATEGIC IMPLEMENTATION MATRIX (CONTINUED)					
			Timeframe (years)		
Strategy/Action Steps	Lead Role	Potential Partners	Short	Med.	Long
C11: Master Planting List					
C11a: Develop master guide to recommended landscape plants	EAC	DOF, F&G, NAT, consultants	1-3		
D: Education and Community Engagement					
D1: Interpretive Signs					
D1a: Assess the need for interpretive signs	EAC, NAT	F&G	1-3		
D1b: Design and implement new signs	EAC, EXP	F&G, NAT, consultants		4-5	
D2: Neighborhood-level Programming					
D2a: Assess neighborhood-level ecological programming. Summarize outreach ideas into document.	EAC, NAT	community leaders, neighborhood groups	1-3		
D3: Park Stewardship Program					
D3a: Develop neighborhood park-stewardship programs	EAC, VCO	ADM, F&G, NAT	1-3		
D4: Ecological Assessment of Parks					
D4a: Compile list of park's ecological features	EAC, NAT		1-3		
D4b: Develop strategies to enhance ecological features	EAC, NAT	F&G	1-3		
D5: Special Event Programming					
D5a: Create and implement new program to expand outreach	EAC, NAT	community leaders, neighborhood groups	1-3		
D6: Environmentally-themed Recreation					
D6a: Develop and implementW environmentally-themed recreational activities.	EAC, NAT		1-3		

*"Where the bumblebee sips and the clover's in loom,
and the zephyr's come laden with peachblow perfume.
Where the thistle-down pauses in search of the rose
and the myrtle and woodbine and wild ivy grows;
Oh, give me the spot that I once used to know
by the side of the placid old River St. Joe!" — Ben F. King*

2021 Natural Resources Management Plan



The St. Joseph River Near Keller Park



219 South St Louis Blvd, South Bend, IN 46617
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